

Aerial Lift and Chipper Safety



Presented by:

Kevin K. Eckert

Arbor Global

ISA Board Certified Master Arborist WE-1785 BU

Aerial Lifts

Aerial lifts permit workers to safely and efficiently access elevated portions of trees to conduct required work



Aerial Lifts

Permit unqualified individuals to easily enter potentially dangerous sites high in trees

- Significantly increases risk to worker and public
- Results in injuries and sometimes fatalities
- Damages trees



Aerial Lift Accidents

Most common:

- Overturns
- Falls from platform
- Boom collapse
- Crushing
- Electrocution



Aerial Lift Accidents

Fatality Statistics:

Cause	Boom-supported lifts	Scissor lifts	Unknown type of lift	Total
Electrocutions	62	6	-	69
Falls	35	23	6	64
Collapses or tipovers	23	21	-	46
Caught in/between	11	-	-	14
Struck by/against	6	-	-	9
Other causes	5	-	-	5
Total deaths	142	55	10	207

Aerial Lift Safety

Always follow safety requirements:

- Applicable laws and regulations
- ANSI standards
- Manufacturer's operating instructions



Aerial Lift Safety

Adequate training, maintenance and operation is critical to avoid serious injury, death and property damage:

- Qualified Operator
- Properly use required personal protective equipment
- Conduct correct inspection and maintenance practices
- Follow safe lift transport and set-up
- Practice correct, safe operating procedures



Aerial Lift Safety

Checklist based on the manufacturer's operator's manual is excellent guide to direct and record each inspection, maintenance and set-up operation.

TAG OUT DEFECTIVE EQUIPMENT PROPERLY AND REPORT ALL REPAIRS		Page 1 of 1						
SAFETY, AND HEALTH PROGRAM		ATTACHMENT: NA						
AERIAL LIFT EQUIPMENT CHECKLIST								
The user will be responsible for ensuring that a pre-acceptance or pre-start inspection of the equipment is performed and documented below:								
	MON	TUE	WED	THURS	FRI	SAT	SUN	
Hose and Cable Guards - Properly secured; no visible damage.								
Drive Motor and Brake Shield - Properly secured; no missing hardware.								
Tire and Wheel Assembly - Properly secured; no loose or missing lug nuts; no visible damage (no cut tires); Tires properly inflated.								
Drive Hub - No visible damage; evidence of leakage.								
Power Tracks - No loose, damaged or missing parts; hydraulic and electrical lines - no visible damage.								
Control Valve and Engine Compartment - No loose or missing parts; evidence of leakage; unsecured wires or hoses.								
Engine Oil Supply - Full mark on dipstick; fill cap secure.								
Muffler and Exhaust System - Properly secured; no evidence of leakage.								
Ground Control Panel - Switches operable; no visible damage; controls secure and legible.								
Counterweight - Properly secured.								
Air Breathing - No visible damage; loose or missing hardware - No obstructions.								
Hydraulic Oil Supply - Full mark on dipstick (if system shut down - machine in elevated position).								
Boom Sections - No visible damage; wire pads secure; boom chain properly adjusted and not damaged.								
Platform Control Console - Switches and levers and no loose missing parts; Levers/switches to return to neutral position.								
Reviewed by Management: _____ Date: _____								
SAFETY		SAFE IMAGES						

AERIAL LIFT DEVICE Preventive Maintenance Checklist	
Comments: _____	
Note: The items below should be inspected during a typical preventive maintenance check. Additional checklist items may be required depending on equipment or circumstances.	
UNDERHOOD	INTERIOR
<input type="checkbox"/> Motor oil, power steering	<input type="checkbox"/> Brakes
<input type="checkbox"/> Coolant level, hoses	<input type="checkbox"/> Steering
<input type="checkbox"/> Fuel line leaks	<input type="checkbox"/> Hoses & safety devices
<input type="checkbox"/> Belt tension	<input type="checkbox"/> Wiper Motor & control
<input type="checkbox"/> Fuel level	<input type="checkbox"/> Mirrors
<input type="checkbox"/> Belts/ties	<input type="checkbox"/> Motors, gauges & control
<input type="checkbox"/> Washfield/Washer	<input type="checkbox"/> Heater
EXTERIOR	<input type="checkbox"/> Seat & seat belts
<input type="checkbox"/> Stop lights	<input type="checkbox"/> Chock
<input type="checkbox"/> Head, tail, direction lights	
<input type="checkbox"/> Cab body, glass	
<input type="checkbox"/> Warning lights	
<input type="checkbox"/> Reflections	GENERAL
<input type="checkbox"/> Coupling devices	<input type="checkbox"/> Exhaust system
<input type="checkbox"/> Hydraulic lines	<input type="checkbox"/> Engine
<input type="checkbox"/> Bucket/platform	<input type="checkbox"/> Fire extinguisher
<input type="checkbox"/> Safety belt / harness	<input type="checkbox"/> Emergency triangle
<input type="checkbox"/> Booms	<input type="checkbox"/> Fire alarm
<input type="checkbox"/> Tires, wheels, lug bolts	
<input type="checkbox"/> Hydraulic reservoirs	
<input type="checkbox"/> Springs - steering mechanism	
<input type="checkbox"/> Drive line, universal joints	
<input type="checkbox"/> Drain air reservoirs	

Qualified Operator

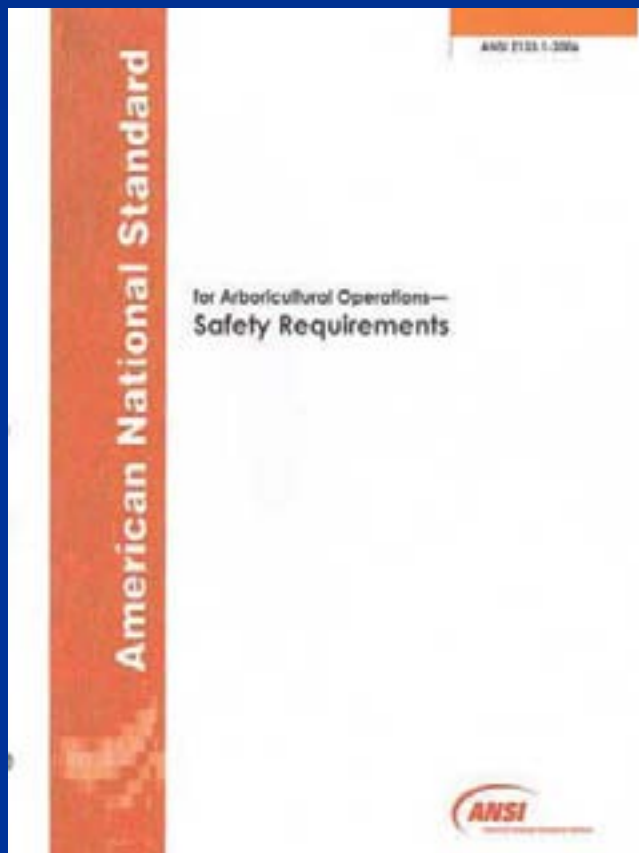
Qualification requires training, knowledge, experience and demonstrated proficiency:

- Read and understand operator's manual



Qualified Operator

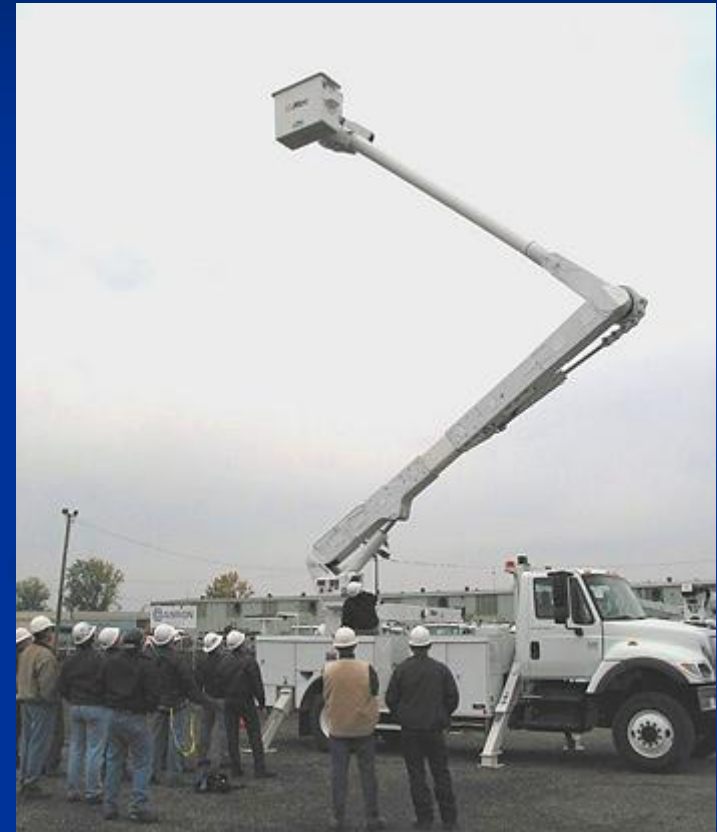
Understand laws and regulations that affect the equipment and job



Qualified Operator

Adequate, hands-on training

- Inspection
- Transport
- Set-up
- Operation



Qualified Operator

Demonstrate proficiency

- Lift operation
- Conduct of work from bucket



Personal Protective Equipment

Select, inspect and properly use all required PPE

- Hard hat
- Body belt/harness
- Lanyard attached to boom or basket
- Eye protection
- Hearing protection?



Aerial Lift Inspection

“Field Modification”

- Modifications in structure, attachments or use not permitted
Unless
- Certified in writing by the manufacturer or nationally recognized testing laboratory, to be in conformity with ANSI A92.2-1969 and as safe as before modification



Aerial Lift Inspection

Inspect key operating parts of carrier and lift

- Prior to use each day
- Anytime incident occurs that may damage lift or carrier
- General condition to ensure clean, dry & no significant defects or damage



Aerial Lift Inspection

Insulated Booms for insulator condition (upper and lower)

- Clean and dry
- Damage or defects



Aerial Lift Inspection

Hydraulic system – fluid levels, leaks



Aerial Lift Inspection

Lift cradle – cracks, damage, lift secure



Aerial Lift Inspection

Outriggers – welds and structure cracks, damage



Aerial Lift Inspection

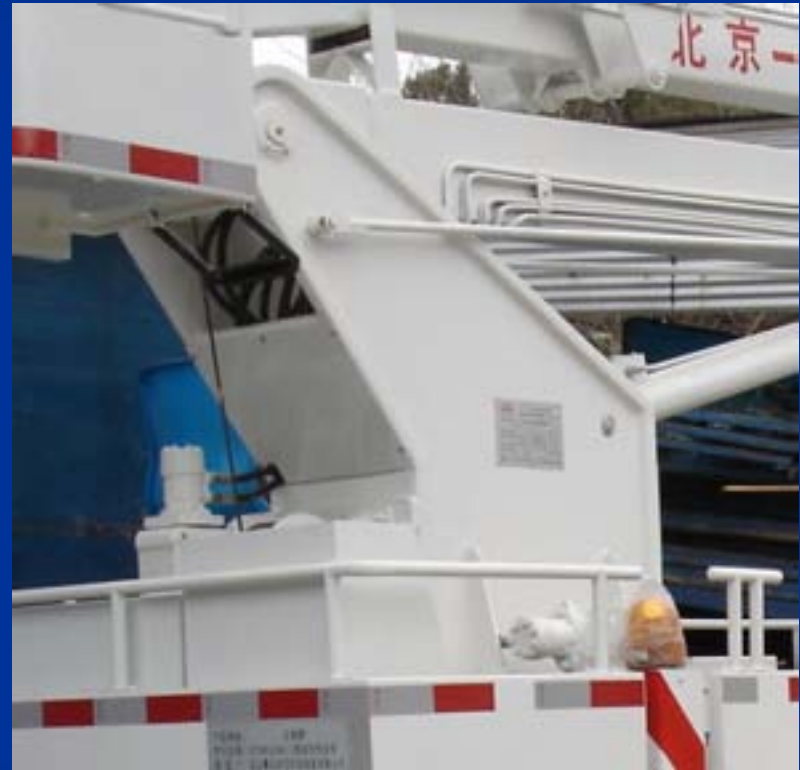
Warning decals in place and readable



Aerial Lift Inspection

Pylon Mast (pedestal)

- Bolts secure with no defects or damage
- Welds - no cracks or other structural defects



Aerial Lift Inspection

Pivot Pins

- Seated properly
- Bushings wear or damage



Aerial Lift Inspection

Drive cables or chains (if present)

- Lubrication adequate
- Signs of cable fatigue or strands broken
- Break tolerances adequate in a single lay of cable



Aerial Lift Inspection

Guard and covers

- In place and in good condition



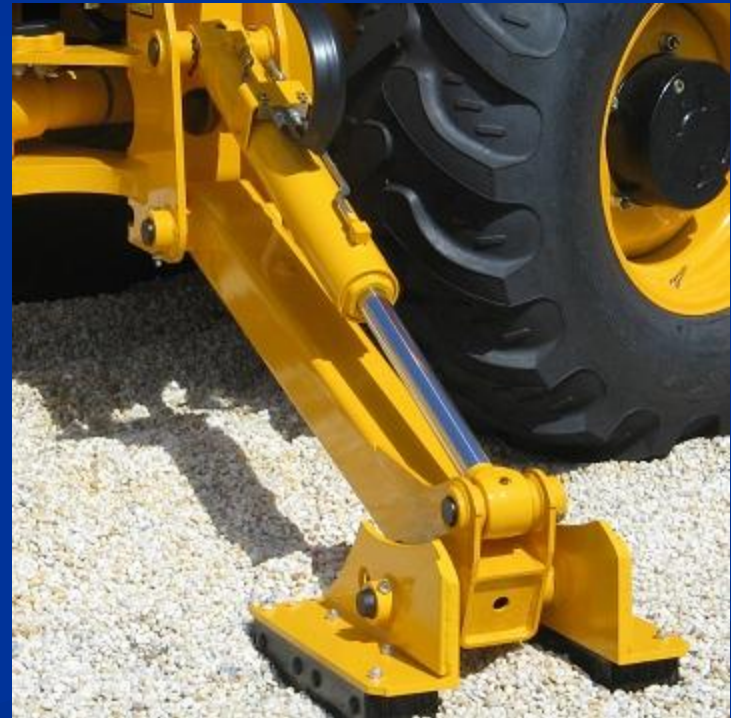
Aerial Lift Inspection

- Hoses:
 - Damage/defects
 - Leaks, cracks, breaks
- Hose connections
 - Secure
 - Cracks, leaks



Aerial Lift Inspection

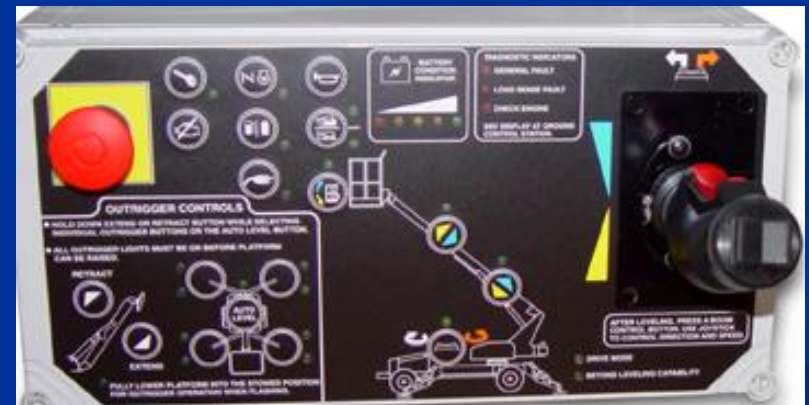
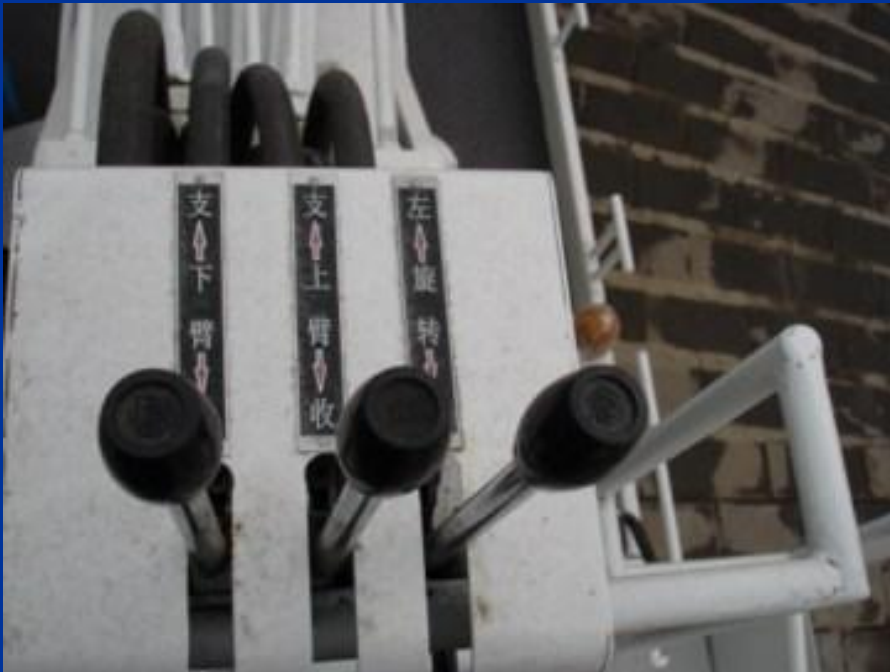
- Drive Cylinders
 - Cylinder Caps - damage, leaking fluid
 - Rod Ends – cracks, excessive wear, damage



Aerial Lift Inspection

Controls

- Labels present and legible
- Test fly all functions –
 - Travel directions smooth and correct
 - Lower control station first, then platform



Aerial Lift Inspection

Bucket/platform

- Welds (cracks)
- Excessive wear
- Damage
- Missing parts
- Proper gate operation
- Lift bolts and cotter pins secure
- Rotation points – cracks, damage



Aerial Lift Inspection

Tires

- Pressure
- Damage
- Lug nuts tight



Aerial Lift Inspection

Brake operation



Aerial Lift Inspection

Safety Devices:

- Lights
- Back-up alarms
- Interlock devices
- Other safety devices



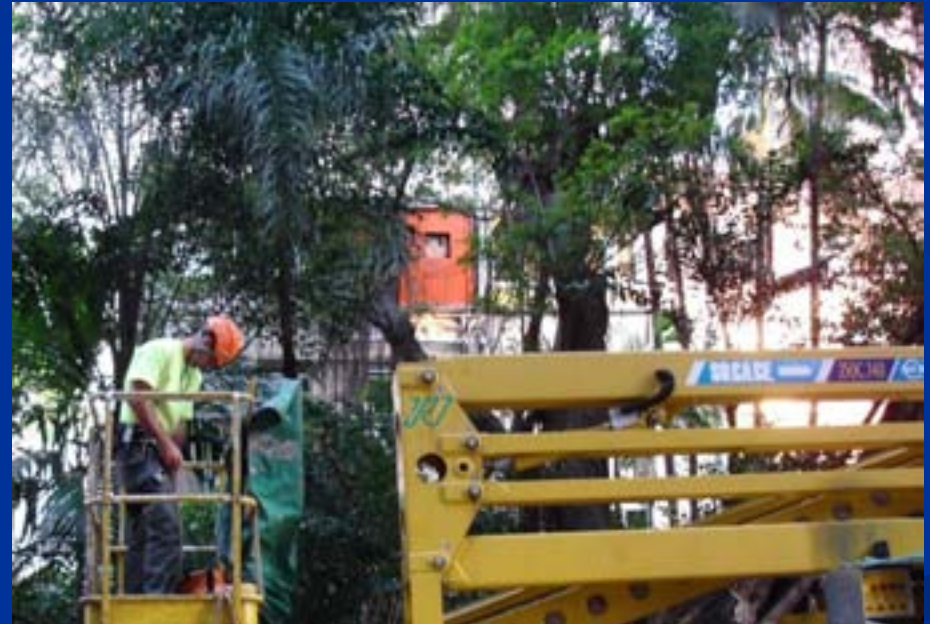
Transport

Ensure carrier and lift secure and safe to move



Transport

- Ensure that the boom is fully retracted/folded
- Cradle and secure boom according to manufacturer



Transport

Stow and secure detachable and portable equipment and attachments



Transport

Know the minimum overhead ground clearance

- **Avoid overhead obstructions**
 - Low utility lines
 - Bridges
 - Tree branches



Transport

Conduct vehicle inspection to conform to DOT requirements



Transport


Ensure all documents current and stored on truck:

- **Current truck inspection**
- **Lift manual**
- **Reports for annual inspections required by manufacturer**

Equipment Name: 430-A	Description: 1300 Freightliner F72SD20047	Year: 2000										
Equipment Status: Dispatchable	Vehicle ID: 13001002	Location Number: 01-000										
Truck And/Or Tractor Maintenance & Safety Inspection Report		Month: Feb 1999										
Range Hours:	Month:	Year:										
For the year of: 1999	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Pre-Inspection & Evaluation: General: Vehicle	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Brake: Components, Hoses and Connections	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Steering and Controls	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Engine and Pumps: Air Filter, Intake, Fuel Filter	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Water Pump, Radiator, Fan, Coolant, and Protection	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Oil and Grease: Fuel, Oil, Grease, and Lubrication	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Electrical: Lights, Horn, Bell, and Warning Devices	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Exhaust & Emission: Components, Controls	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Body: Components, Fasteners and Fastenings	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Doors: Locks, Latches, Controls and Protection	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Fasteners: Locks, Nuts, Bolts, Washers & Protection	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Hydraulics and Pumps: Cylinders, Hoses & Controls	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Engine: Hoses, Oil & Grease	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Oil and Grease: Fuel, Oil, Grease, and Lubrication	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Exhaust & Emission: Components, Controls	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Body: Components, Fasteners and Fastenings	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Doors: Locks, Latches, Controls and Protection	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Fasteners: Locks, Nuts, Bolts, Washers & Protection	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Hydraulics and Pumps: Cylinders, Hoses & Controls	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Engine: Hoses, Oil & Grease	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Oil and Grease: Fuel, Oil, Grease, and Lubrication	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Exhaust & Emission: Components, Controls	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Body: Components, Fasteners and Fastenings	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Doors: Locks, Latches, Controls and Protection	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Fasteners: Locks, Nuts, Bolts, Washers & Protection	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Hydraulics and Pumps: Cylinders, Hoses & Controls	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Engine: Hoses, Oil & Grease	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Oil and Grease: Fuel, Oil, Grease, and Lubrication	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Exhaust & Emission: Components, Controls	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Body: Components, Fasteners and Fastenings	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Doors: Locks, Latches, Controls and Protection	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Fasteners: Locks, Nuts, Bolts, Washers & Protection	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Hydraulics and Pumps: Cylinders, Hoses & Controls	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Engine: Hoses, Oil & Grease	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK
Oil and Grease: Fuel, Oil, Grease, and Lubrication	OK	OK	OK	OK</								

PERIODIC MAINTENANCE

FOR THE INLAND 4000



Serial Number	N 111 111 111			
Engine Number	21 11 11 11			
Platform Number	11	11	Platform	11
Platform Model	11	11	11	11
Year Serial Device is Registered With	11	Platform	11	11
Capacity of Battery Platform	500			
Capacity of Platform in Tons	500			

WARNING

BEFORE OPERATING UNIT, READ AND UNDERSTAND ALL OPERATING AND SAFETY INSTRUCTIONS CONTAINED IN THE MANUFACTURER'S OPERATING AND SAFETY MANUAL AND THE UNIT. FOR ALL OTHER SAFETY INFORMATION, SEE THE UNIT.

OPERATION AND MAINTENANCE

1. INSPECT VEHICLE AND AERIAL DEVICE, INCLUDING OPERATING UNIT, JOINT, EIGHT, TOWER, INSPECT, TOWER, IN MANUAL.
2. CHECK INSULATED BOOM AND ALL INSULATED COMPONENTS FOR CLEANING AND DAMAGED.
3. FOR STATIONARY OPERATION, VEHICLE MUST BE SECURED BY POWER AND DAMAGED FROM THE WIRE TO BE PERFORMED BEFORE AERIAL DEVICE IS OPERATED.
4. WHEN PHOTOS AND PHOTOS POWER TOWER.
5. DO NOT OPERATE UNLESS UNIT IS SET ON LEVEL AND BOOM SPACING.
6. ON BOOM IN EXCESS OF AT EXTEND PLATFORM ONLY COVER UP ALL BOOM OF BOOM.
7. SHOCK AND COVER ALL DAMAGED BOOM OF UNIT IS SET DAMAGED.
8. DO NOT LOAD BEYOND PLATFORM CAPACITY.
9. OPERATIONS SHALL WEAR A BOVY BELT AND ATTACH WITH A LATCHED TO BOOM OR PLATFORM.
10. OPERATE ALL CONTROLS SLOWLY FOR SMOOTH PLATFORM MOTION.
11. INSPECT AND SERVICE UNIT PER INSTRUCTIONS IN MANUAL.

KEEP FACTORY AWAY FROM TRUCK WHEN OPERATING TOWER

THIS UNIT IS ELECTRICALLY INSULATED.

PERIODIC ELECTRICAL TESTING REQUIRED: SEE SERVICE MANUAL.

WATED LINE VOLTAGE (AS DESIGNED)	345	V
ELECTRICAL QUALIFICATION TEST PERFORMED	68	V

THIS UNIT COMPLETES WITH ANSI A2.3-1975.

Transport

- Working fire extinguisher stored in appropriate location
- Fully stocked first aid kit, appropriate for the work stored in appropriate location



Transport

Conduct final walk-around inspection

- Ensure all attachments, equipment and lift boom properly secured.

